## REMARKS/ARGUMENTS

Claims 1-13 were previously pending in the application. Claims 1, 7, and 11 are amended; and new claims 14-17 are added herein. Assuming the entry of this amendment, claims 1-17 are now pending in the application. The Applicant hereby requests further examination and reconsideration of the application in view of the foregoing amendments and these remarks.

Miscellaneous Amendments

Claims 1 and 11 have been amended to avoid the potential of an unintended misinterpretation of the claim. The amendment defines the path cost for a candidate path pair as "a function of sharability of one or more links within the corresponding candidate restoration path." Thus, a restoration path is more clearly defined as having one or more links and avoids limiting paths to only those having multiple links. Support for this amendment can be found in the specification at page 7, lines 28-30 ("A path is a set of one or more links and zero, one, or more corresponding intermediate nodes that interconnect links"). This amendment was not made to overcome any prior art.

Claim 7 has been amended to correct the inadvertent typo "Then" noted by Examiner on page 2 of the Office Action. Claim 7 has also been amended to overcome a §112 rejection, as discussed below. These amendments were not made to overcome any prior art.

35 U.S.C. 112 Rejection

In pages 2-3 of the Office Action, Examiner rejected claim 7 under 35 U.S.C. 112 as indefinite. Applicant has amended claim 7 to clarify the claim language. Claim 7 has been amended to depend from claim 3, to eliminate the potentially-confusing term "approximation," and to more-clearly describe a particular way of calculating the sharing degree. This amendment was not made to overcome any prior art.

Examiner objected to the phrase regarding a bitwise AND computation in claim 7. Claim 7 recites the step of "computing the bitwise AND of the binary representation of the node-link vector and the binary representation of the primary path node-link vector." This step involves computing the logical conjunction of corresponding bits of (i) the binary representation of the node-link vector and (ii) the binary representation of the primary path node-link vector. For example, the bitwise AND of sample node-link vector $\{a_1, a_2, a_3, a_4, a_5\} = \{0,0,1,0,1\}$ and

sample primary path node-link $\{b_1, b_2, b_3, b_4, b_5\} = \{1,0,0,1,1\}$ is $\{a_1$ AND $b_1$, $a_2$ AND $b_2$, $a_3$ AND $b_3$, $a_4$ AND $b_4$, $a_5$ AND $b_5,\} = \{0,0,0,0,1\}$.

Prior-Art Rejections

In pages 3-8, the Examiner rejected claims 1-13 under 35 U.S.C. 102(b) as being anticipated by Doshi et al. (U.S. Pat. No. 6,130,875).

Claims 1 and 11

Examiner rejected claim 1 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 1, including "generating a path cost associated with said each candidate path pair, wherein the path cost for a candidate path pair is a function of sharability of links within the corresponding candidate restoration path." Examiner cited column 25, lines 30-38, of Doshi as specifically teaching this step. The cited section teaches ordering route pairs based on a $G(r, \lambda, s, \mu)$ index. The cited section says nothing about sharability of links within the candidate restoration path.

The calculation of the $G(r, \lambda, s, \mu)$ index for a path pair is described in column 23 of Doshi. As described, the index may correspond to:

> (1) the minimum, across all links on a given pair of routes, of free capacity for selected wavelengths; (2) the index in (1) divided by the total number of links in the two routes; (3) a constant $\alpha$ multiplied by the minimum free capacity on a primary route plus a constant [$\beta$] multiplied by the minimum free capacity on a restoration path; or (4) $\alpha$ multiplied by the min[i]mum free capacity on the primary divided by the number of links in the primary, plus [$\beta$] multiplied by the minimum free capacity on the restoration divided by the number of links in the restoration.

As can be seen from the above, the index is based on the "narrowest" link in the paths r and s and the number of links in those paths. There is **no** indication provided that the calculation of the $G(r, \lambda, s, \mu)$ index is dependent on the sharability of links within the corresponding candidate restoration path (path s, presumably), as required by claim 1. Thus, it cannot be said that Doshi teaches all the features of claim 1.

Applicant submits therefore that claim 1 is allowable over Doshi. For similar reasons, Applicant submits that claim 11 is also allowable over Doshi. Since claims 2-10 and 14-17 depend variously from claim 1, and claims 12-13 depend from claim 11, it is further submitted that those claims are also allowable over Doshi.

Claim 2

Examiner rejected claim 2 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 2, including (i) "generating a link cost associated with each link in the corresponding candidate restoration path," and (ii) "generating the path cost as a function of a sum of the link costs for all links in the candidate restoration path." Examiner cited column 26, lines 8-17, of Doshi as specifically teaching feature (i) and column 25, lines 41-51, of Doshi as specifically teaching feature (ii).

*feature (i)*

As described above, Doshi teaches calculating an index value for a candidate path pair based on the "narrowness" of the "narrowest" link and the number of links in a path. The cited section of Doshi teaches the acceptance or denial of a capacity request by links in a path based on the free capacity of the links.

*feature (ii)*

As described above, Doshi teaches calculating an index value for a candidate path pair based on the "narrowness" of the "narrowest" link and the number of links in a path. Doshi does **not** teach calculating a path cost by summing the individual link costs for all links in the candidate restoration path. Instead, the cited section of Doshi teaches sending probe messages along candidate paths and obtaining free capacity values for links in the candidate paths. Thus, it cannot be said that Doshi teaches feature (ii) of claim 2.

Applicant submits that this provides further reasons for the allowability of claim 2 over Doshi. Since claims 3-7 and 15-17 depend variously from claim 2, this also provides further reasons for the allowability of those claims over Doshi.

Claim 3

Examiner rejected claim 3 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 3, including "generating the link cost as a function of a sharing degree for the link." Examiner cited column 25, lines 41-51, of Doshi as specifically teaching this feature.

Assuming, *arguendo*, that the free capacity taught in Doshi is analogous to the sharing degree (SD) of claim 3, which Applicant does **not** admit, Doshi teaches obtaining "SD" values for links in a candidate path. Doshi does not, however, teach generating a link cost as a function

of the sharing degree for a link and then summing those link costs to calculate a path cost, as required by claim 3. Thus, it cannot be said that Doshi teaches all the features of claim 3.

Applicant submits that this provides further reasons for the allowability of claim 3 over Doshi. Since claims 4-7 and 16-17 depend variously from claim 3, this also provides further reasons for the allowability of those claims over Doshi.

Claim 4

Examiner rejected claim 4 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 4, including (i) "if the link utilization is greater than the specified threshold, then generating the link cost as a function of an administrative weight for the link and available capacity on the link," and (ii) "if the link utilization is less than the specified threshold, then generating the link cost as a function of the administrative weight for the link." Examiner cited column 23 of Doshi, under the FC header in the table, as teaching this feature.

Specifically, Examiner stated that the cited section "shows that the FC value is updated even if the commit message is rejected and the threshold is [sic] if the FC is greater than zero." It is in unclear to Applicant what the above means and, furthermore, the cited section says nothing about commit message or thresholds. In fact, Doshi's only mention of thresholds is in reference to a wavelength power level threshold, at column 10, lines 55-57.

Doshi does **not** anywhere teach comparing a link's utilization level to a threshold utilization level, let alone having the result of that comparison determine the generation of the link cost for the link. Thus, it cannot be said that Doshi teaches all of the features of claim 4.

Applicant submits that this provides further reasons for the allowability of claim 4 over Doshi. Since claim 16 depends from claim 4, this also provides further reasons for the allowability of that claim over Doshi.

Claim 7

Examiner rejected claim 7 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 7, including calculating a sharing degree by (i) "computing the bitwise AND of the binary representation of the node-link vector and the binary representation of the primary path node-link vector," and (ii) "computing the OR of all elements of the resulting vector to determine whether sharing is

possible." Examiner cited column 25, lines 30-38 and 43-48, of Doshi as specifically teaching these features.

Neither the cited section nor any part of Doshi teaches, or even mentions, node-link vectors, binary representations of node-link vectors, or bitwise operations of any kind, let alone the particular computations recited in claim 7. Thus, it cannot be said that Doshi teaches all of the features of claim 7.

Applicant submits that this provides further reasons for the allowability of claim 7 over Doshi. Since claim 17 depends from claim 7, this also provides further reasons for the allowability of that claim over Doshi.

<u>Claim 9</u>

Examiner rejected claim 9 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 9, including a sharing degree defined as "the maximum value *m* for which $\max\{ m \cdot V_{pnl} + V_{nla} \}$ = RB." Examiner cites column 25, lines 30-38, of Doshi as specifically teaching this feature.

Neither the cited section, nor any part of Doshi teaches, or even mentions, node-link vectors, let alone determining the maximum value *m* for which max{*m*(primary path node-link vector for the link) + (aggregate node-link vector for the link)} is equal to current reservation bandwidth on the link. Thus, it cannot be said that Doshi teaches all of the features of claim 9.

Applicant submits that this provides further reasons for the allowability of claim 9 over Doshi.

<u>Claim 10</u>

Examiner rejected claim 10 based on the alleged teachings in Doshi. In particular, according to Examiner, Doshi teaches all of the claimed features of claim 9, including a sharing degree defined as "the maximum value *m* for which $\max\{ m \cdot V_{pn} + V_{na} \}$ = RB." Examiner cites column 25, lines 30-38, of Doshi as specifically teaching this feature.

Neither the cited section, nor any part of Doshi teaches, or even mentions, node vectors, let alone determining the maximum value *m* for which max{*m*(primary path node vector for the link) + (aggregate node vector for the link)} is equal to current reservation bandwidth on the link. Thus, it cannot be said that Doshi teaches all of the features of claim 10.

Applicant submits that this provides further reasons for the allowability of claim 10 over Doshi.

Claim 14

New claim 14, which depends from claim 1, is supported by, *e.g.*, originally-presented claim 1, and the specification at page 23, lines 21-29 and page 26, lines 21-23. Since Doshi does not teach all of the features of new claim 14, this provides further reasons for the allowability of new claim 14 over Doshi.

Claim 15

New claim 15, which depends from claim 1, is supported by, *e.g.*, originally-presented claim 1, and the specification at page 7, lines 28-30. Since Doshi does not teach all of the features of new claim 15, this provides further reasons for the allowability of new claim 15 over Doshi.

Claim 16

New claim 16, which depends from claim 4, is supported by, *e.g.*, the specification at page 24, lines 1-18, and Fig. 10. Since Doshi does not teach all of the features of new claim 16, this provides further reasons for the allowability of new claim 16 over Doshi.

Claim 17

New claim 17, which depends from claim 7, is supported by, *e.g.*, the specification at page 21, lines 10-14. Since Doshi does not teach all of the features of new claim 17, this provides further reasons for the allowability of new claim 17 over Doshi.

Fees

During the pendency of this application, the Commissioner for Patents is hereby authorized to charge payment of any filing fees for presentation of extra claims under 37 CFR 1.16 and any patent application processing fees under 37 CFR 1.17 or credit any overpayment to Mendelsohn & Associates, P.C. Deposit Account No. 50-0782.

The Commissioner for Patents is hereby authorized to treat any concurrent or future reply, requiring a petition for extension of time under 37 CFR § 1.136 for its timely submission, as incorporating a petition for extension of time for the appropriate length of time if not submitted with the reply.

In view of the above amendments and remarks, the Applicant believes that the now pending claims are in condition for allowance. Therefore, the Applicant believes that the entire application is now in condition for allowance, and early and favorable action is respectfully solicited.

Respectfully submitted,

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